

Space Communications

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The official link for this solicitation is: <http://sbir.nasa.gov/SBIR/sbirsttr2011/solicitation/index.html>

Agency:
National Aeronautics and Space Administration

Release Date:
July 18, 2011
Branch:
n/a

Open Date:
July 18, 2011
Program / Phase / Year:
SBIR / Phase I / 2011

Application Due Date:
September 08, 2011

Solicitation:
[2011 SBIR](#)

Close Date:
September 08, 2011
Topic Number:
01

Description:

NASA's communications capability is based on the premise that communications shall enable and not constrain missions. Communications must be robust to support the numerous missions for space science, Earth science and exploration of the universe. Technologies such as optical communications, RF including antennas and ground based Earth stations, surface networks, cognitive networks, access links, reprogrammable communications systems, advanced antenna technology, transmit array concepts, and communications in support of launch services including space based assets are very important to the future of exploration and science activities of the Agency. Emphasis is placed on size, weight and power improvements, and even greater emphasis is placed on these attributes as small satellites (e.g., micro and nano satellite) technology matures. Communication technologies enabling acquisition of range safety data from sensitive instruments is imperative. Innovative solutions centered on operational issues are needed in all of the aforementioned areas. All technologies developed under this topic area to be aligned with the Architecture Definition Document and technical direction as established by the NASA Office of Space Communications and Navigation (SCaN). For more details, see: (<https://www.spacecomm.nasa.gov/spacecomm/>, <https://www.spacecomm.nasa.gov/spacecomm/programs/default.cfm>, <https://www.spacecomm.nasa.gov/spacecomm/programs/technology/default.cfm>, <https://www.spacecomm.nasa.gov/spacecomm/programs/technology/sbir/default.cfm>). A typical approach for flight hardware would include: Phase I - Research to identify and evaluate candidate telecommunications technology applications to demonstrate the technical feasibility and show a path towards a hardware/software demonstration. Bench or lab-level demonstrations are desirable. Phase II - Emphasis should be placed on developing and demonstrating the technology under simulated flight conditions. The proposal shall outline a path showing how the technology could be developed into space-worthy systems. The contract should deliver a demonstration unit for functional and environmental testing at the completion of the Phase II contract. Some of the subtopics in this topic could result in products that may be included in a future flight opportunity or on-orbit testing. Please see the following for more details:

- NASA Office of the Chief Technologist: (<http://www.nasa.gov/offices/oct/home/index.html>, http://www.nasa.gov/offices/oct/game_changing_technology/small_satellite_subsystem_tech/index.html, http://www.nasa.gov/offices/oct/crosscutting_capability/index.html).
- International Space Station payload opportunities: (http://www.nasa.gov/mission_pages/station/research/nlab/index.html).

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http://www.nasa.gov/mission_pages/station/research/experiments_category.html).

- CoNNeCT (Communications, Navigation & Networking Reconfigurable Testbed): (<http://spaceflight systems.grc.nasa.gov/SpaceOps/CoNNeCT/>).
- Terrestrial analogs (Desert Rats, Haughton Field):(<http://science.ksc.nasa.gov/d-rats/>, <http://ti.arc.nasa.gov/tech/asr/intelligent-robotics/haughton-field/>).
- SMD Topic S4 for more details concerning requirements for Small Satellite flight opportunities. NOTE: Communications technologies relevant to space-based range are solicited for in Space Transportation Subtopic O2.03 - 21st Century Spaceport Ground System Technologies.